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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/659,523	09/09/2003	Phong Diep	SP02-219	4728

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EXAMINER	
DIACOU, ARI M	
ART UNIT	**PAPER NUMBER**
3663	

DATE MAILED: 09/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/659,523	DIEP ET AL.	
	Examiner	Art Unit	
	Ari M. Diacou	3663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 April 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-34* is/are pending in the application.

4a) Of the above claim(s) *15-34* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *1-34* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-14, drawn to the dispersion compensating fiber, classified in class 359, subclass 337.5.

II. Claims 15-28, drawn to method of operating a transmitter and receiver system with a DCF, classified in class 398, subclass 148.

III. Claims 29-34, drawn to the Raman amplifier, classified in class 359, subclass 334.

2. Inventions I and II are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case the method could be practiced on an apparatus employing optical time-division reflectometry.

3. Inventions III and II are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different

process of using that product (MPEP § 806.05(h)). In the instant case the method could be practiced on an apparatus employing optical time-division reflectometry.

4. Inventions I and III are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, invention III has separate utility such as a Raman medical laser. See MPEP § 806.05(d).

5. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

6. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

7. During a telephone conversation with Svetlana Short on 9-13-2005 a provisional election was made without traverse to prosecute the invention of the dispersion compensating apparatus, drawn to claims 1-14. Affirmation of this election must be made by applicant in replying to this Office action. Claims 15-34 are withdrawn from

further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 1-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- Regarding claims 1, 3-6, 8, 11-12 and 14, the use of "about" renders the claims indefinite because of its use in creating a doubly open-ended range. In the MPEP, section 2173.05(b) specifically states that the use of "about" in claiming a range around a point was held to be definite, while the use of "at least about" was held to be indefinite. Specifically the phrases listed below render their instant and dependent claims indefinite.
    - more negative than about -50 ps/nm/km
    - more positive than about -40 ps/nm/km
    - about 1555 nm to about 1615 nm
    - at least about equivalent
    - an absolute value between about 15 ps/nm/km and about 25 ps/nm/km
    - between about -0.05 $ps/nm^2/km$ and about 0.05 $ps/nm^2/km$
    - at least about 50 nm greater

- at least about 1.8%
- about 1.8 μm and about 2.4 μm
- less than about 3 km
- between about 0 ps/nm^2/km and about 0.15 ps/nm^2/km.
- the absolute value of the residual dispersion is less than about 10% of the absolute value of the dispersion caused by the length of transmission fiber over a wavelength range of about 1555 nm to about 1615 nm.

- Regarding claims 1, 3-6, 8, 11-12 and 14, the use of "substantially different" renders the claims indefinite because of its use in creating a doubly open-ended range. In the MPEP, section 2173.05(b) specifically states that the use of "substantially equal" in claiming a range around a point was held to be definite, because one of ordinary skill in the art could ascertain the meets and bounds of the claim. "Substatially exclusive" was held to be indefinite. –Quaker Oil Corp. vs. Quaker State Oil Refining Corp. (PO TM TAppBd) 161 USPQ 547.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States

only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

11. As best as it is understood by the examiner claims 1-6 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Miyakawa et al. (USPP No. 2001/0021291).

- Regarding claim 1, Miyakawa discloses a dispersion compensating device having an input and an output, the device comprising:
  a. a dispersion compensating fiber having a dispersion more negative than about -50 ps/nm/km over a wavelength range of about 1555 nm to about 1615 nm; , [Fig. 1, #22] [¶ 0081]
  b. a Raman gain fiber having a dispersion more positive than about -40 ps/nm/km over a wavelength range of about 1555 nm to about 1615 nm; and , [Fig. 1, #12a or #12b] [¶ 0081]
  c. a pump source operatively coupled to the dispersion compensating fiber and the Raman gain fiber, the pump source operating at a pump wavelength, [Fig. 1, #14] [¶ 0073-0074]
  d. wherein the dispersion compensating fiber has a Raman Figure of Merit at the pump wavelength, and [Inherent, the figure of merit is a mathematical construction which is well-defined for every optical fiber]
  e. wherein the Raman gain fiber has a Raman Figure of Merit at least about equivalent to the Raman Figure of Merit of the dispersion compensating fiber, and [inferable from Figures 2-3 and 8-10 and the specification]

f. wherein the dispersion compensating fiber and the Raman gain fiber are arranged in series between the input and the output of the device. [Fig. 1]

- Regarding claim 2, Miyakawa discloses the dispersion compensating device of claim 1, wherein the Raman gain fiber has a Raman Figure of Merit of at least 10 W^{-1} at the pump wavelength. [inferable from Figures 2-3 and 8-10 and the specification]
- If traversal is to be made to the prima facie case against claim 2 or element e. of claim 1, the applicant must furnish clearly legible calculations for verification by the examiner that the Figure of Merits of the Raman fiber and the DCF in the invention of Miyakawa are not "at least about equivalent" (or any condition which will overcome the 35 USC 112 rejection on claim 1)
- Regarding claim 3, Miyakawa discloses a Raman fiber with D=19 ps/nm/km
- Regarding claim 4, The dispersion slope of most silica fiber is $\partial D/\partial\lambda|_{1550nm} \approx .058$ $ps/nm^2/km$ [See Hada et al. (USPP No. 2001/0051031)]
- Regarding claim 5, The ZDW is 1300 nm [¶ 0025] while the pumping wavelength is 1450 nm [¶ 0026]
- Regarding claim 6, Fiber 12a where most of the Raman amplification occurs has a mode field diameter of 10μm.
- Regarding claim 9, Miyakawa discloses a dispersion shifted fiber [Fig. 1, #12b], with substantially different fiber properties. [¶ 0081]

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

13. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

14. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

15. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miyakawa as applied to claims 1-6 and 9 above. Further, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adjust the dispersion

spectrum suggested by Miyakawa to achieve a desired result. It is well-settled that optimizing a result effective variable is well within the expected ability of a person of ordinary skill in the subject art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980), In re Aller, 220 F.2d 454, 105 USPQ 233 (CCPA 1955).

16. Claims 8 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyakawa as applied to claims 1-6 and 9 above. Further, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adjust the length of the dispersion compensatinbg fiber so that the cumulative dispersion created by the previous fibers was optimally mitigated suggested by Miyakawa to achieve a desired result. It is well-settled that optimizing a result effective variable is well within the expected ability of a person of ordinary skill in the subject art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980), In re Aller, 220 F.2d 454, 105 USPQ 233 (CCPA 1955).

Claim Objections

17. Claim 14 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claims 8 and 14 are identical and both dependent on claim 1. Claim 14 has the same scope as claim 8.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ari M. Diacou whose telephone number is (571) 272-5591. The examiner can normally be reached on Monday - Friday, 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on (571) 272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AMD 9-13-2005

JACK KEITH
PRIMARY EXAMINER
SPE 3663